Application No. 10/737,219   Docket No. AL139156

CLAIM AMENDMENT

1 (Currently Amended).   A method for communication between two or more
customer virtual local area network (LAN) segments through a provider network, with
each customer virtual LAN segment including a customer edge bridge, and where the
provider network has one or more provider edge bridges coupled to the customer edge
bridges, comprising the steps of:

in at least one of the provider edge bridges coupled to a customer virtual LAN
segment:

receiving a topology change notification (TCN) notifications (TCNs) from
the customer network in response to a topology change in one or more of the
customer virtual LAN segments;

in response to receiving the a TCN from the customer network,
determining whether the topology change in the one or more of the customer
virtual LAN segments does not affect paths of data units through the provider
network by monitoring end host media access control (MAC) addresses in data
units received from the customer network for a predetermined time period to
determine whether the topology change in the one or more of the customer virtual
LAN segments affects paths of data units through the provider network;

determining that the topology change in the one or more of the customer
virtual LAN segments does not affect paths of data units through the provider
network, wherein the determining includes:

determining that less than a predetermined number of new end host
MAC addresses of data units received from the customer network in the
predetermined time period are not found in a MAC address memory file,
wherein the MAC address memory file associates end host MAC
addresses with ports of the provider edge bridge; and

determining no contradictions occur in the predetermined time
period between that an end host MAC address of a data unit received from
the customer network and is included in the MAC address memory file;
and

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in response to determining the topology change in the one or more of the customer virtual LAN segments <u>does not</u> ~~do not~~ affect paths of data units through the provider network upon receiving the TCN from the customer network, storing the new end host MAC addresses of data units received from the customer network in the predetermined time period in the MAC address memory file without flushing the MAC address memory file<u>; and</u>

<u>in response to determining the topology change in the one or more of the customer virtual LAN segments affects paths of data units through the provider network upon receiving the TCN from the customer network, flushing the MAC address memory file.</u>

2 – 4. (Canceled).

5 (Previously Presented).   The method of claim 1 further comprising: storing a list of the end host MAC addresses that are received during the predetermined time period and are not found in the address memory file.

6 (Original).   The method of claim 1 wherein said end host address are media access control (MAC) addresses.

7 (Original).   The method of claim 1 wherein the data units are frames.

8 -10. (Canceled).

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11 (Currently Amended).   A provider edge bridge of a provider network for providing communication with one or more customer edge bridges of customer local area network (LAN) segments, comprising:

processing circuitry for:

receiving a topology change notification (TCN) from the one or more customer edge bridges in response to a topology change in one or more of the customer LAN segments;

in response to receiving the TCN from the customer network, monitoring end host media access control (MAC) addresses in data units received from the one or more customer edge bridges for a predetermined time period to determine whether the topology change in the one or more of the customer LAN segments affects paths of data units through the provider network;

determining that the topology change in the one or more of the customer LAN segments does not affect paths of data units through the provider network by:

determining less than a predetermined number of end host MAC addresses of data units received from the customer network in the predetermined time period are not found in a MAC address memory file, wherein the MAC address memory file associates end host MAC addresses with ports of the provider edge bridge; and

determining no contradictions occur in the predetermined time period between an end host MAC address of a data unit received from the customer network and the MAC address memory file;

flushing the MAC address memory file when it is determined that topology change has occurred in one or more of the customer LAN segments and the topology change does affect ~~affecting~~ paths of data units through the provider network; and

in response to determining that the topology change in the customer LAN segments do not affect paths of data units through the provider network, storing any of the end host MAC addresses of data units received from the customer network in the predetermined time period not found in the MAC address memory file in the MAC address memory file without flushing the MAC address memory file.

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12   14. (Canceled).

15 (Previously Presented).   The provider edge bridge of claim 11 further comprising:

   a memory for storing a list of end host addresses that are received during the predetermined time period and are not found in the address memory file.

16 (Original). The provider edge bridge of claim 11 wherein said end host address are media access control (MAC) addresses.

17 (Original). The provider edge bridge of claim 11 wherein the data units are frames.

18 – 22. (Canceled).

23 (Currently Amended).   A method of a provider edge bridge for a provider network coupled to a customer virtual LAN segment, comprising:

receiving a topology change notification (TCN) by the provider edge bridge from the customer virtual LAN segment in response to a topology change in the customer virtual LAN segment;

in response to receiving the TCN from the customer virtual LAN network, determining that the topology change in the customer virtual LAN segments does not affect entries in a media access control (MAC) address memory file of the provider edge bridge, by monitoring end host MAC addresses in data units received from the customer virtual LAN network for a predetermined time period, wherein the determining includes:

determining that an end host MAC address of a data unit received from the customer network does not contradict information in the MAC address memory file; and

determining that a predetermined number of new end host MAC addresses in the data units received from the customer virtual LAN network during the predetermined time period is within a predetermined threshold; and

in response to determining that the topology change in the customer virtual LAN segments does not affect entries in the MAC address memory file of the provider edge bridge, storing the new end host MAC addresses in the data units received from the customer network during the predetermined time period in the MAC address memory file without generating an unlearning operation of the MAC address memory file in response to receiving the TCN from the customer virtual LAN network; and

in response to determining the topology change in the one or more of the customer virtual LAN segments affects paths of data units through the provider network upon receiving the TCN from the customer network, flushing the MAC address memory file.

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24 (Previously Presented). The method of claim 23, wherein the determining that the topology change in the customer virtual LAN segments does not affect entries in a media access control (MAC) address memory file, further includes:

    storing the new end host MAC addresses in the data units received from the customer virtual LAN network during the predetermined time period in a new address file;

    transmitting the new address file to other provider edge bridges to determine whether the new address have been learned by the other provider edge bridges; and

    when new end host MAC addresses were not learned by the other provider edge bridges, storing the new end host MAC addresses in the MAC address memory file without generating an unlearning operation of the MAC address memory file in response to receiving the TCN from the customer virtual LAN network.

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